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OCTOBER 30, 1948

SCIENCE NEWSLETTER

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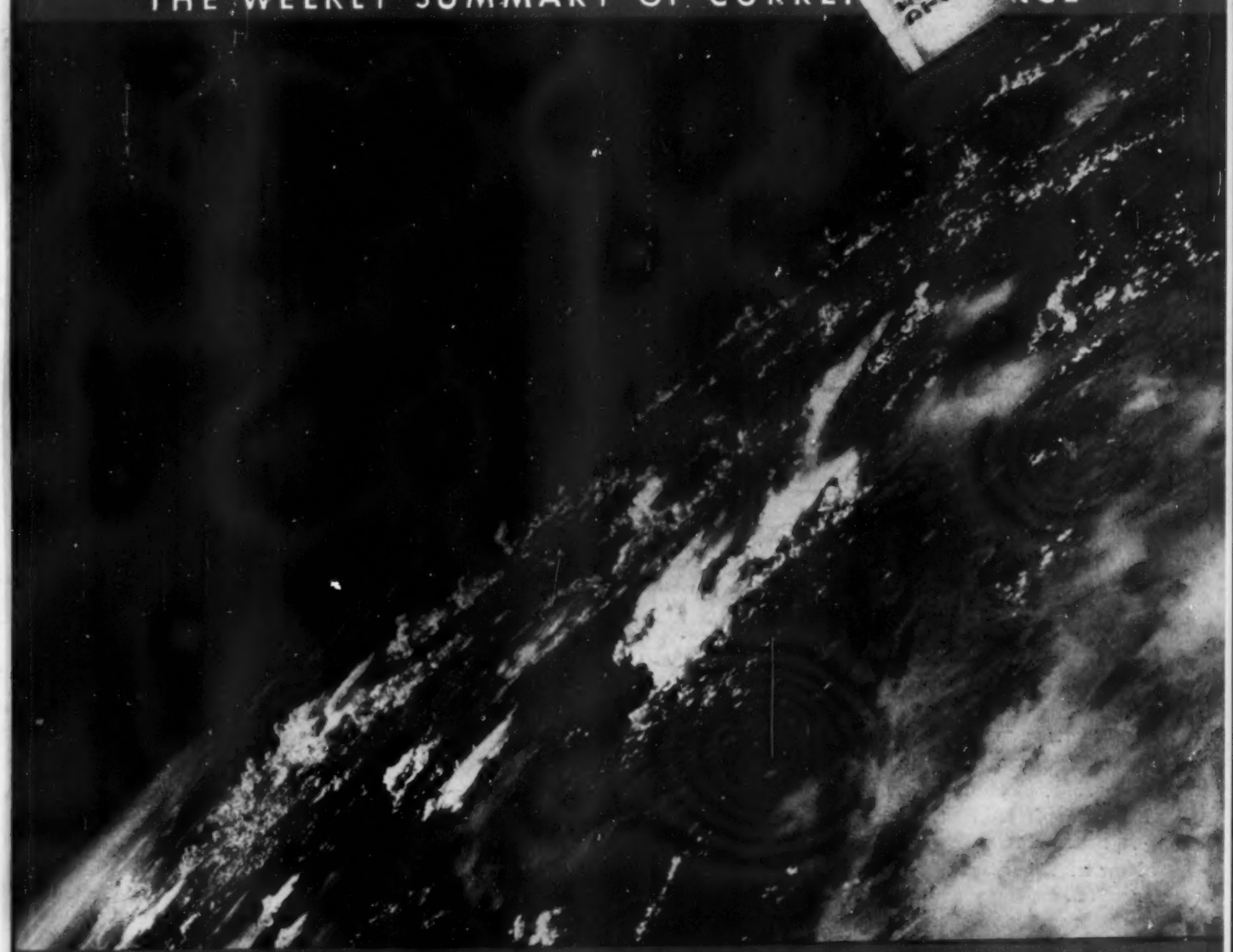

Rim of the Earth

See Page 281

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Vol. 54 NO. 18

Election returns telecast by NBC will be seen by television's ever-increasing audience.

See History in the making—on Television

Thirty years ago, to get election results, people waited for the morning papers . . . or election "extras." Then came radio! In 1920 election returns were broadcast for the first time.

Now television arrives as a star "reporter" . . . making you an eye witness of politics as it is practiced . . . of history as it is made . . . of the news as it happens!

In the world's largest television newsroom, RCA image orthicon cameras will watch the incoming returns. State-by-state results will be telecast with the speed of light to be viewed—sharply, clearly—on the screens of more than 500,000 television receivers.

You will see the candidates when they appear, in person or on newsreels. In fact, more people will see them by television on this election night than saw Lincoln during his entire four years in the White House!

More than forty million people live within the areas now reached by regular television programs. Pioneering and research at RCA Laboratories, coupled with RCA "know-how" in engineering, production and broadcasting, have contributed greatly to bring this new service to the American people.

• • •

When in Radio City, New York, you are cordially invited to visit the radio, television and electronic wonders at RCA Exhibition Hall, 36 West 49th Street. Free admission. Radio Corporation of America, RCA Building, Radio City, N. Y. 20.

RCA **RADIO CORPORATION of AMERICA**

MEDICINE

Surgical Aids for Heart

Cutting off the top of the heart and wrapping the aorta in plastic to prevent its bursting may help in prolonging the life of the patient.

➤ OPERATIONS in which a piece is cut off the top of the heart and others in which the aorta, main artery leading from the heart, is wrapped in plastic to prevent its bursting, were reported at the meeting of the American College of Surgeons in Los Angeles.

The heart topping operation is designed for patients with rheumatic heart disease who are in danger of having a clot plug an artery of arm or leg. In 90% of such cases the clots come from one of the upper chambers of the heart, particularly from the muscular pouches at the top of these chambers called auricular appendices. Two cases in which this operation was performed on the left side of the heart were reported by Dr. John L. Madden of Long Island College of Medicine and Kings County Hospital, Brooklyn. One of the patients survived, the other died.

The operation gives promise of providing surgeons with an avenue for easier operations within the heart than are now possible, Dr. Walter J. Burdette of Louisiana State University School of Medicine reported. Working on dogs, he found it possible either to remove the auricular appendix or merely to open it safely. Opening it gives greater visibility and consequently easier operation within the heart.

Any piece of heart muscle removed in such operations, Dr. Burdette advised, should be saved for studies which might help clear up some fundamental problems of human heart function and its changes in disease.

Five patients have lived one to three years with their aortas wrapped in one of the modern plastics, a commercial polyethylene film, Dr. J. Carl Poppe of Portland, Ore., reported. He has done the plastic aorta wrapping operation on 10 patients within the past 38 months. The patients each had a sac, called an aneurysm, formed by the dilatation of the aorta in the chest. The condition resulted from syphilis. It causes pulsating, or throbbing, pain in the chest and the patient is in danger of rupture of the big artery and massive bleeding.

Four of the five patients who had this operation from one to three years ago have had enough relief of pain in the chest so that they could make a partial or complete return to their normal activities. One of these five died a year and a half after the operation from rupture of another part of the aorta.

Of the other five patients, two died from progression of the disease within four to eight weeks after the wrapping, two cannot be traced and are believed to have died, and one has been treated too recently for evaluation of the results.

The good results are due to the fact that the plastic wrapping is a substance foreign to the body. In reaction to this foreign material, the body develops tough, fibrous tissue. In preliminary studies with animals, Dr. Poppe found that within two weeks after the wrapping the walls of the aorta were markedly thickened as a result of this fibrous tissue reaction, and the dilated bore, or lumen, had become smaller. The reaction was even greater three months later.

DuPont polythene film was found most suitable of all the commercial varieties because it contains dicetyl phosphate. This chemical was found to be the irritating material that caused the healing reaction.

Science News Letter, October 30, 1948

AERONAUTICS-CHEMISTRY

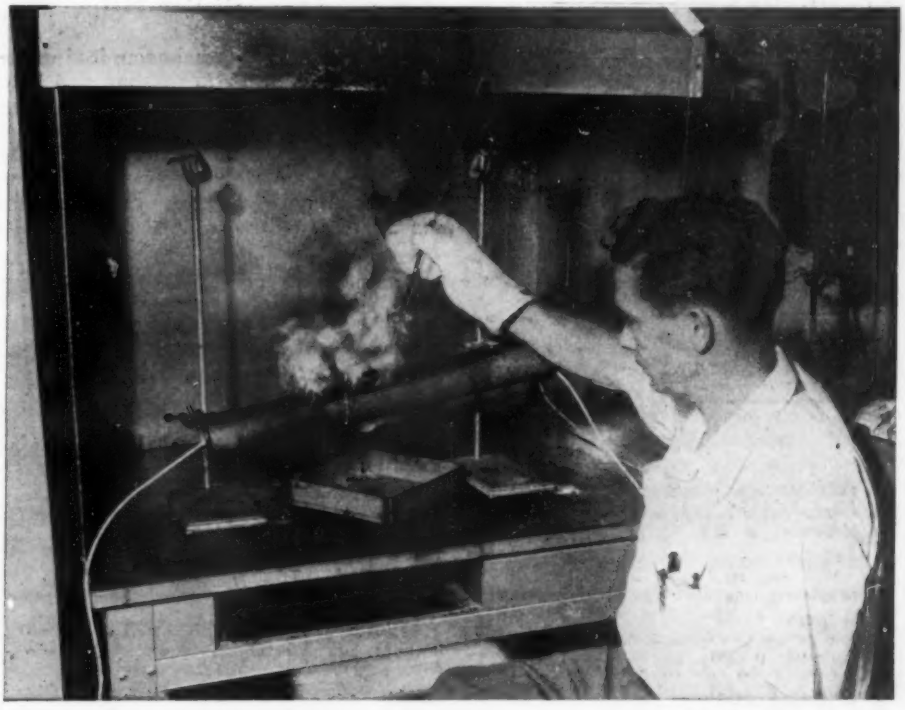
Fluid Cuts Fire-Hazard

➤ DANGER OF FIRE in an airplane from leaking hydraulic fluids used to operate essential mechanism is practically eliminated by a new non-flammable type fluid revealed by Monsanto Chemical Company of St. Louis, in whose laboratories it was developed.

This new hydraulic fluid, to be known as Skydrol, is an ester base and contains no halogenated hydrocarbons, salts or water. Chemically, it is virtually inert. It will not attack the structural metals used in an airplane. It is a stable organic compound, highly resistant to aeration oxidation. In addition, it has high lubricating power.

The hydraulic system of an airplane is operated by pumps, and develops high pressures at high flow rates upward of 3,000 pounds per square inch. The fluid is used to activate the mechanism that controls such devices as retractable landing gear, brakes, wing flaps and even windshield wipers.

It must be oily to lubricate the rapidly moving parts of the pumps, and non-corrosive to avoid attacking the various metals



NON-FLAMMABLE FLUID — Planes will be safer from fire with this new hydraulic fluid. Picture shows Skydrol dripped onto a glowing red tube of stainless steel, which is heated internally to a temperature of 1300 degrees Fahrenheit. It bursts into flame momentarily and then vaporizes.

in the hydraulic system. Also it must not undergo undue thinning at high temperatures and thickening at low temperatures. It should have low specific gravity to avoid undue weight to the plane.

Ordinarily, the hydraulic fluid is completely confined within the hydraulic system, which includes piping extending to many parts of the plane. Occasionally, due in part to the high pressures used, the system springs leaks. A leak causes the fluid to be expelled as a fine spray. If it is flammable, it may catch fire from exhausts, from contact with the hot manifold, or from sparks from the plane's electric system.

Science News Letter, October 30, 1948

MEDICINE

Insecticide Cures Itch

► A PREPARATION made from an insecticide in a vanishing cream base may be the best cure yet found for scabies, popularly called "the itch."

It may also be effective in getting rid of lice.

Complete cures of scabies resulted in 61 patients after one treatment, in 36 patients after two treatments and in three patients after three treatments with hexachlorocyclohexane, Drs. A. Benson Cannon and Marvin E. McRae of Columbia University and the Vanderbilt Clinic in New York, reported in the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION (Oct. 23).

The advantages of this preparation over the older ones such as sulfur and benzyl benzoate are that it produces no irritation or sensitivity to the drug and has proved effective in cases in which the other preparations have failed.

The physicians cite the case of a man who had a widespread persistent eruption of scabies for over four months. He was treated with sulfur ointment and benzyl benzoate without any relief. After one application of hexachlorocyclohexane cream the rash and itching disappeared.

Specimens of the itch mite were obtained from each patient to confirm the diagnosis. This was done by inserting a sharp needle into the beginning of the burrow made by the mite, a painless procedure as the burrow is confined to the horny layer of the skin, and withdrawing the mite on the needle point.

The procedure then was to rub a thin film of the cream from the neck to the sole of the feet without allowing the patient to wash beforehand. After 24 hours he was allowed to bathe and was asked to use fresh underwear and night clothes and to change the bed linen. Members of his family were also examined and received treatment if they were infected.

Army medical investigators had previously found the drug important in the control of chiggers, ticks, fleas, cockroaches, bedbugs and lice. It was used as a spray on uniforms and in field fumigation.

Science News Letter, October 30, 1948

CHEMISTRY

Clicking Counter Warns of Poison Lead in the Air

► A DETECTOR for poisonous lead in the air that clicks madly in warning similar to a Geiger counter affected by radioactivity was announced to the Optical Society of America meeting in Detroit, by Henry Aughey, of the DuPont Experimental Station, Wilmington, Del., and O. G. Koppius of the Philips Laboratories.

Atmospheric contamination by lead is an acute problem in the chemical industry. The new instrument can be carried about to test air wherever the danger of this accumulative poison exists. It is extremely sensitive and gives an approximate assay of the air in addition to detecting relatively high concentrations of lead, whether combined chemically or in its form as an element.

Suspected air is drawn through a spark discharge, the light from which is caught and split up by a quartz spectroscope. The tell-tale lines of lead are measured in two ways: Photographically or by substituting a photoelectric Geiger counter for the photographic plate. As little as one part in 20,000,000 of lead can be made to register as the warning counter clicks.

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Question Box

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RADIO

Prints Radio Newspaper

A new communication system, called Ultrafax, can send a million words a minute, including illustrations, by television and radio relays.

► TELEVISION, radio relays and facsimile are combined in a new communication system called Ultrafax, demonstrated in Washington by the Radio Corporation of America. It reproduces in the receiving station a full page of printed or written matter with illustration, as is done by facsimile, but it does it at television speed, and it can send a million words a minute.

As explained by David Sarnoff, president of RCA, one possible development with Ultrafax is the exchange of international television programs achieved on a transoceanic basis. A service of television and Ultrafax would permit the same receiving set to bring various types of publications into the home without interrupting the program being reviewed. Special attachments to the television receiver would be required.

He pointed out the possibility of the establishment of great newspapers as national institutions and the instantaneous transmission and reception of complete editions in every home equipped with a television set.

The Ultrafax system, it was explained, combines the elements of television with the latest techniques in radio-relaying and high-speed photography. In regular service the transmissions could be radio-relayed any distance by using the commercial radio-relay system towers which are now being erected for television. They could cross the ocean by means of air-borne relay stations in airplanes traveling in lazy circles over properly spaced locations. It would be possible to have the same transmitter that broadcasts the television program simultaneously broadcast the radio newspaper.

Ultrafax's remarkable speed, RCA engineers explained, is possible because full pages of information are transmitted as television pictures at the rate of 15 to 30 a second. The steps in sending include the preparation of data to be transmitted, to assure a continuous flow at high speed, scanning the copy with what is known as a flying-spot television scanner, transmission of the television image as ultra-high radio-frequency signals, and reception on a projection-type television kinescope, or picture tube, from which incoming messages are recorded on motion picture film, or ultimately directly onto photographic paper.

At the end of the transmission, the exposed film can be transferred quickly to a special processing unit developed by Kodak Research Laboratories. The film is passed through a miniature developing tank, rinsed and fixed in less than 15 seconds and dried in 25 seconds more. The Ultrafax film may be enlarged to full-sized copy by means of a high-speed continuous process machine.

Science News Letter, October 30, 1948

MEDICINE

Cures Reported from Cancer Battlefront

► HERE IS WHAT is happening on the national cancer battlefront, as reported to the American College of Surgeons meeting in Los Angeles.

There were 343 patients cured of cancer and 132 who survived over a five-year period at The Tumor Clinic of King County Hospital, Seattle, Washington, according to Dr. Donald V. Trueblood, director.

Twenty-five out of 49 victims of cancer of the breast were cured over a five-year period, 34 out of 77 with cancer of the neck of the uterus and 22 of 38 with cancer of the body of the uterus, at the Tumor Clinic, Emory University Hospital in Atlanta, Dr. J. Elliott Scarborough, Jr., reported.

Of 244 patients with cancer of the large intestine on which follow-up work was done, 122 survived five years or longer at the Scott and White Clinic, Temple, Texas, Drs. George V. Brindley and R. R. White indicated.

"During a 12-year period, 4,000 patients were cured of cancer at the Veterans Administration Hospital, Hines, Illinois," according to Drs. Charles B. Puestow and Joseph R. Hufschmitt, and Philipp W. Zinkgraf.

The five-year survival rate in six upstate New York counties based on study of all cancer cases reported from 1940-1944 is 26%, data presented by Dr. Frederick S. Wetherell, of Syracuse Memorial Hospital, shows.

"A good deal of statistical evidence is now available which indicates that the curability of cancer is increasing year by year," Dr. Edward J. Ottenheimer of the Windham Community Memorial Hospital, Willimantic, Conn., told the cancer symposium.

In the seven-year period, 1935 to 1941, there were nearly 13,000 cases of proved cancer in Connecticut. "The increase in five-year survivals since 1935 ranged from 9% to 37%," he stated. "This striking change has not been confined to cancer of any particular organ, but applies in different degrees to cancer of every important site as well as to the total group."

Science News Letter, October 30, 1948

NEW NURSING BOTTLE—The mother is shown feeding the baby out of a new collapsible, disposable nursing bottle that requires no washing or sterilizing.

INVENTION

New Plastic Nursery Aid Eases Feeding of Babies

► IT WILL BE "Shellie-fed" instead of bottle-fed for modern babies whose mamas do not breast-feed them, if the hopes of inventor and producers of the newest nursery aid, called Shellies, are fulfilled.

The baby will get his formula from a collapsible bag that can be thrown away after use. Soft and cuddly Shellies, with their specially designed nipple, are said to give the baby much the feeling of security and warmth that breast-fed babies get while nursed by their mothers. Because the bottles are collapsible, there is no back-pressure, no air for the infant to swallow and consequently less need for "burping."

Shellies were invented by a registered nurse, Mrs. Adda May Allen, of The Plains, Va. They are produced by the Shellmar Products Corporation of Mount Vernon, Ohio. They are about to be placed on the market, on a regional basis at first, and will be available at drug, department and infant specialty stores throughout the nation "reasonably" soon, the manufacturers of the plastic bottle announced.

Shellies come in a long roll, each bottle sealed off from the next in line. They are already sterilized and since each is thrown away after its use, bottle washing and sterilizing are eliminated. They will cost about one cent apiece, but to use them mothers will also need a bottle expander, bottle rack, aluminum inner rings, plastic outer locking rings, special "natural-action" nipples and plastic shell caps to protect the

nipples until use. Price of the entire outfit has not yet been set.

Saving in storage space is an added advantage pointed out by the manufacturers.

One hundred empty Shellies take up less space than one four-ounce glass bottle. And they will not break or burst even when dropped on a hard surface.

Science News Letter, October 30, 1948

PALEONTOLOGY

Near-Human Pygmy Race

➤ AFRICA once had a pre-human race of pygmies—or near-pygmies—who lived in caves, knew the use of fire, and used big bones of game animals as clubs in hunting and fighting. Their average weight was probably under 100 pounds, yet they had brains as big as modern gorillas weighing four or five times that figure.

This description of a "new," although long-extinct, race of human (or near-human) beings sums up three years' work by scholarly pick-and-shovel men under the direction of Prof. Raymond A. Dart of the University of the Witwatersrand, Johannesburg, South Africa. He presents his findings in detail for the first time in the AMERICAN JOURNAL OF PHYSICAL ANTHROPOLOGY (Sept.).

Crucial find in establishing the identity of this race of little near-men was a broken piece of skull, representing a considerable section of the bulging back portion of the cranium. It has definite human characteristics, Prof. Dart declares.

In the same cave were many bits of charcoal embedded in the solidified debris, together with some bones that were also charred—strong evidence of the use of fire. Baboon skulls, always broken as by a heavy blow, he takes as evidence that the cave-dwellers were meat-eaters and hunters. Ends of long bones of animals are battered, as if used for clubs.

The new find belongs in the same general group to which the name Australopithecus was given some 25 years ago. The long word translates into English as "southern ape," because when the first fossils were discovered, and for a considerable time after that, it was thought that they were apes with some human characters, rather than small, highly primitive men. However, declares Prof. Dart, every find of Australopithecus that has been made since has tended to push him further away from the apes and closer to human status. In this, he adds, several other researchers on ancient man agree with him.

Because the newly found skull fragment appears to be quite distinct from the Australopithecus types hitherto known, Prof. Dart considers it to represent a distinct species, and he has accordingly given it a new name: *Australopithecus prometheus*. The second or specific name is that of the hero of ancient Greek mythology who first taught men the use of fire, and is a reference to the traces of fire found in the cave.

Science News Letter, October 30, 1948

MEDICINE

Diet Is Aid in Liver Ill

➤ A DIET rich in protein, supplemented with vitamin B complex, improved the health and prolonged the life of patients with cirrhosis of the liver, which is often the result of overindulgence in alcohol.

Traditionally, the diet prescribed for liver disease is one that is high in carbohydrate but low in protein and fat. This study was made to contrast the results between 124 patients treated with the new diet and 386 patients treated with the traditional diet, and appears in the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION (Oct. 23).

The work is reported by Drs. Arthur J. Patek, Jr., Joseph Post, Oscar D. Ratnoff and Harold Mankin, and Robert W. Hillman, of the Goldwater Memorial Hospital and the College of Physicians and Surgeons, Columbia University.

In 61 patients of 115 (nine not having been followed long enough) the unsightly accumulation of fluid in the abdomen disappeared, as did the jaundice and swelling, there was a gain in weight and strength and improvement in liver function.

At the end of one year, 65% of the patients treated with the new diet were alive and only 39% of the control group studied for contrast; at the end of two years, 50% of the treated patients and 21% of the controls were alive, and at the end of five years 30% of the treated patients and 7% of the controls were alive.

The scientists chose a diet rich in protein and ample in carbohydrate and fat for these patients because there were signs of malnutrition. Ninety-one patients, they found, had lived on poor diets mainly deficient in meat and dairy products.

Twelve patients furnished further proof that this dietary treatment was effective. After recovery following treatment, they fell into their former drinking and poor eating habits. Relapse of their former condition followed. "In effect, they reproduced the conditions of the experiment," the scientists point out. "The fact that these 12 patients responded well to the same treatment on two or more occasions suggests that improvement resulted from treatment and that it was not 'spontaneous.'"

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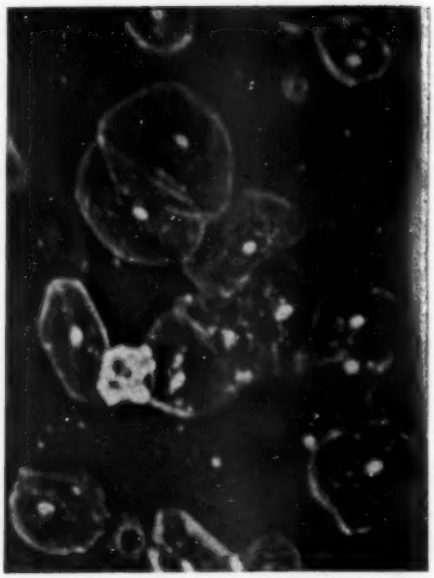

CELLS IN THE MOUTH—Here is the way the cells which form the skin of your mouth would look in a photograph taken with the ultraviolet phase microscope. These epithelial cells are greatly magnified.

PHYSICS

Phase Microscope and Ultraviolet Spy on Cells

➤ LIVING CELLS will be spied upon in more detail than ever before through the extension of phase microscopy into the ultraviolet.

Ultraviolet photographs made with a phase microscope, which takes advantage of the fact that light travels in waves to bring out details without preliminary staining, were sharper than those made with visible light.

More details show up in the ultraviolet photographs of cells from the skin in the mouth than were visible in previous pictures, report A. H. Bennett, D. L. Woernley and A. J. Kavanagh of the Scientific Instruments Division, American Optical Company, Buffalo, N. Y. This instrument shows great promise, they state in the JOURNAL OF THE OPTICAL SOCIETY OF AMERICA (Aug.).

The ultraviolet phase microscope, first of its kind to be reported, incorporated a filter that produced a rather broad band of ultraviolet radiation and another band extending into the near infra-red. The photographic film was such that it picked up only the ultraviolet radiation.

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Man is not the only animal that makes hay in the summer; the rabbit-like *cony* of the Rocky Mountains cuts grass and other plants and, after they have dried in the hot sun, carries the hay by mouthfuls to his den for winter food.

PHYSICS

New Magnetic Particle

When and if discovered, this subnuclear particle may help explain why all electrons carry the same unit amount of negative charge, physicist predicts.

➤ A NEW subnuclear particle, this one bearing a magnetic charge instead of the more familiar plus or minus electrical charge of the proton or electron, has been predicted.

The new particle has yet to be observed in the laboratory, since its generation by an artificial atomic collision would require energies greater than provided by any present atom smashers. Neither has it been observed in cosmic ray studies, probably because no one was looking for it.

The description of the new magnetic particle, in a very technical article in THE PHYSICAL REVIEW (Oct. 1), comes from Dr. P. A. M. Dirac, the British mathematical physicist now working at the Institute for Advanced Study in Princeton, N. J.

Prof. Dirac once before, in 1931, predicted the existence of and properties for an unknown particle. That particle was the positron, and it was then actually discovered about a year later in a cloud chamber photograph by Dr. Carl D. Anderson of the California Institute of Technology.

Why add a new particle to the present long list, especially when the particles now known are so incompletely explained? Prof. Dirac raised that question, and then answered it by saying that the new particle is needed for theoretical reasons. It is needed, he said, in order to help explain why all electrons carry the same unit amount of negative charge. That electric charges, such as those on the electron, proton or meson, do occur in even multiples of the same electronic unit charge has been known experimentally for a long time. Still, there has been no adequate explanation of this even-multiple type of regularity.

Prof. Dirac now surmises that there is no explanation for the regularity apart from the existence of magnetic particles on the subatomic level. Moreover, if there exists even one of these particles in the universe, this theory requires all electric charges to be even multiples of the electronic charge.

The particle could be created in an artificial collision having an energy of 500,000,000 electron volts, it is estimated. This puts it out of range of even the 184-inch cyclotron at Berkeley, Calif., with its 400,000,000-electron-volt particles, which artificially created mesons. Thus, for the moment, search for such a magnetic particle will have to be made through cosmic ray studies, until the billion-volt generators are completed.

What will it look like? In a cloud chamber, it should give a heavy track of uniform density through its path. This will help distinguish it from such tracks as those of alpha particles, which get denser as the particle slows to a stop. Also, in a strong magnetic field, the new magnetic particle should be deflected toward one of the pole-pieces, instead of running in circles as electrons and protons do.

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MEDICINE

Mass Survey for Diabetes

➤ A MASS SURVEY to detect unsuspected cases of diabetes, aided by a new quick test for sugar in the blood, will be conducted throughout the nation by medical societies and public health authorities during National Diabetes Week, Dec. 6 to 12.

Object of the survey, which will be sponsored by the American Diabetes Association, is to help those who do not know they have the disease to get treatment for it before they get seriously sick with the disease or its complications.

There are 1,000,000 known and 1,000,000 unknown diabetes victims in the United States, Dr. Priscilla White of the Joslin Diabetes Clinic, Boston, reported at a conference in Washington. These figures are based on surveys already conducted in Oxford and Brookline, Mass., and Jacksonville, Fla.

A new kind of insulin, declared by Dr. White to be the "best yet available," is now under trial at the Joslin Clinic and elsewhere. It is known as NPH 50. It is not yet on the market and will not be until production of a uniform product on a large scale is worked out. It is a crystalline protamine insulin. Previous protamine insulins have been amorphous, or non-crystalline. The new insulin combines speed of action with long lasting effects. With the older insulins, a dose each of a fast and of a long-lasting one must be given. This means either two injections or measuring and mixing two doses for a single injection. The new insulin is a one-shot job. It takes effect in two hours and lasts 28 hours.

The new fast test for sugar in the blood, to be used in the mass survey along with tests for sugar in the urine, was developed by scientists of the U. S. Public Health Service. It can be done with a few drops of blood from finger or ear, and takes only five minutes. It is considered a screening test only, and those whom it shows to be probably diabetic will be referred to their doctors for further tests to make certain whether or not they have diabetes.

The reason for two tests, Dr. White explained, is that some persons may have sugar in the urine without having diabetes.

Science News Letter, October 30, 1948

PHYSICS

Uranium Can Be Detected By Spectral Analysis

➤ VERY SMALL amounts of the atomic energy atom, uranium, can be detected by a new method of spectral analysis reported to the Optical Society of America meeting in Detroit by Dr. L. T. Steadman of the University of Rochester.

Expected to be of use in measuring uranium present in many sorts of materials, the sample is burned in the crater of an electric carbon arc and the light given off is split into its spectrum lines by a quartz spectroscope. The brightness of the uranium lines measured shows the amount of the metal present.

Science News Letter, October 30, 1948

GIANT BIRD BABY—This condor boasts a weight of 19 pounds and 8 ounces—and it's only 13 weeks old. It is the first female Andean condor ever to be born in captivity and it is at the Zoological Gardens of San Diego. When it grows up it will weigh 20 to 25 pounds and have a wing spread of 7 to 9 feet. Condors are not only the largest birds of prey but also the largest land birds of flight.

PUBLIC HEALTH

Aid Found to Protection Against Lead Poisoning

➤ A NEW AID to protection against lead poisoning was announced by Dr. Lall G. Montgomery and Everett Johnson of Muncie, Ind., at the meeting in Chicago of the American Society of Clinical Pathologists.

People who have been exposed to lead, as in certain industries, excrete through their kidneys more than the normal amount of certain pigments called porphyrins, the Muncie scientists found.

Among college students, student nurses and employees of an industrial plant in which there was no measurable lead exposure, less than 2% excreted more than normal amounts of these pigments. Among employees of industries in which variable amounts of exposure to lead were possible, 34% excreted more than the normal amount of porphyrins. Several patients with lead poisoning all excreted increased amounts of the porphyrins.

The porphyrin excretion, by giving an index of exposure to lead, might help prevent lead poisoning by showing which employees were in danger and needed to change their work and also which spots in industries needed extra protective measures to reduce the exposure to lead.

Science News Letter, October 30, 1948

BIOLOGY

Quickest-Maturing Animals Produce Most Offspring

➤ THE SOONER they mature the more offspring they have. This principle, demonstrated in laboratory animals by Drs. Harold H. Cole and Robert B. Casady of the University of California College of Agriculture in Davis, Calif., will be of obvious practical importance if it is found to hold good in farm animals, they point out.

The two scientists used two inbred strains of rats in their research. One strain, developing to maturity at an average age of 36 days, produced 8.9 young per litter. Rats of the other strain, which required as much as 42 days to reach maturity, produced litters averaging only 6.5 young.

General application of this principle in chickens and turkeys has already been demonstrated by other researchers.

Science News Letter, October 30, 1948

MEDICINE

New Operation Overcomes Paralysis of Vocal Cords

➤ PARALYSIS of the vocal cords can be overcome in some cases by a new operation devised by Dr. William C. Thornell of Cincinnati.

Dr. Thornell reported his operation to the American Academy of Ophthalmology and Otolaryngology meeting in Chicago. He explained that it is for cases in which the vocal cords have become paralyzed because of nerve damage that sometimes happens during operations in nearby parts of the neck.

In these cases the patient has trouble breathing, develops a shrill "crow" in trying to breathe, and may lose his voice entirely.

Former operations to correct the condition were done from the outside of the throat and patients often had to wear a tube through the front of the neck to the windpipe to breathe.

Dr. Thornell operates from inside through the mouth. He removes a tiny cartilage from the tissue supporting the vocal cords. This lets one cord pull aside by its own tension. The air-way is then opened and the patient can breathe normally without the tube from the outside of the throat.

Normal breathing was fully restored in three patients and two of them, he reported, found their voices much improved.

Science News Letter, October 30, 1948

MEDICINE

Facts on Nervous System May Come from Antibiotic

➤ STREPTOMYCIN, the mold chemical which has been rescuing thousands of persons from germ diseases, may give the most important addition to understanding of a certain part of the nervous system that has been made in the past 100 years. This by-product value of a famous germ-fighting chemical was suggested by Capt. Page Northington, U. S. Navy, at the meeting of the American College of Surgeons in Los Angeles.

Capt. Northington was studying the effects of streptomycin on the eighth cranial nerve. Part of this nerve is concerned with hearing and part with equilibrium, or balance. It is the nerve which is involved in Meniere's disease. Some patients, usually those getting large doses of streptomycin, have suffered damage to this nerve. They have ringing or noises in the ears and walk with a drunken gait.

The main site of damage, Capt. Northington believes from his studies, is not in the nerve and not in its end organ in the brain, but in the "vestibular nuclear complex and adjacent cochlear nuclei" of the internal ear.

If this is confirmed by further studies, a correlation of this information along with clinical examination and functional ear tests should provide some specific knowledge of deafness and tinnitus, or ringing in the ears, of central origin. It would also provide "the most important addition to understanding the functional organization" of the nervous system of the vestibular part of the ear "since original observations on the peripheral components were made by Flourens and Meniere 100 years ago."

Science News Letter, October 30, 1948

IN SCIENCE

ENGINEERING

Fiber Glass Boats to Be Tested by the Army

➤ GLASS BOATS are to be tried out by the Army. They will not be transparent like ordinary glass; they will be made of fine glass fiber, matted or woven together and impregnated with a plastic.

The boats will be of the assault type, powered by an outboard motor, and large enough to carry a dozen or so soldiers. One advantage is that they will weigh only three-fourths as much as present aluminum boats; also they have great strength.

Construction is simple. A one-piece boat can be made, using an inflated rubber bag against a mold of wood, gypsum, steel or aluminum over the sides of which the fiber glass and plastic mixture has been spread. The inflated bag gives the necessary pressure. The temperature required is from 225 to 325 degrees Fahrenheit. The manufacturing process is similar to that employed in making fiber glass wings for airplanes.

These boats will never need painting. Coloring matter is included in the plastic used, which is an alkide resin adhesive. Even scratches in the finish will not show. Field repair can be effected with a hot patch. The fungus-proof material has high impact resistance and does not warp with temperature changes.

Science News Letter, October 30, 1948

ENGINEERING

Magnetic Particles Reveal Flaws Inside Metal Tubes

➤ MAGNETIC iron oxide particles, fluorescent lights, a mirror and a surveyor's telescope are being used to detect tiny flaws on the inside surfaces of holes bored in long metal forgings. The process is a laboratory technique and is not for commercial uses.

This flaw-detecting method, in use in laboratories of the General Electric Company, can indicate flaws one five-hundredth of an inch wide in a boring 35 feet long. It involves magnetizing the forging and then blowing the iron oxide particles down the hole.

These particles align themselves with the north and south magnetic poles of any cracks or flaws which are present. Then a small cylinder on which three fluorescent tubes and a small mirror has been mounted is slowly drawn through the hole. The surveyor's telescope is used to view the mirror. Flaws in the forging, being outlined by the iron oxide particles, are visible.

Science News Letter, October 30, 1948

E FIELDS

GENERAL SCIENCE

Rocket-Borne Cameras Snap Large Section of Earth

See Front Cover

➤ PICTURES covering the largest section of the earth ever to be photographed at one time were recently taken from a V-2 rocket. It was shot up about 60 miles above the White Sands, New Mexico, Proving Ground, and from it were photographed about 800,000 square miles of the earth.

Two other rocket-borne cameras were installed in a Navy Aerobee which zoomed to a height of about 70 miles and photographed about 300,000 square miles.

Each camera took more than 200 photographs at one and one-half second intervals.

At almost the peak of the Aerobee's flight, altitude 57 miles, the curvature of the earth and the surface haze can be plainly seen as shown on the cover of this week's SCIENCE NEWS LETTER.

The Aerobee rocket photographed a strip 1,400 miles in length, stretching from upper Wyoming on the north to deep into Mexico on the south. The width of the area photographed ranged from 45 to 400 miles at the horizons.

Scientists of the Applied Physics Laboratory of the Johns Hopkins University in Silver Spring, Md., cooperated in this project with the Navy Bureau of Ordnance.

Science News Letter, October 30, 1948

GEOLOGY

Coral Reefs May Add to Petroleum Supply Some Day

➤ CORAL REEFS in distant waters may some day contribute to the petroleum supply—but not in time to help present shortages. It will be crude oil for future eons which may be hundreds of thousands of years from now.

It is the tiny animals that form coral reefs that are manufacturing the petroleum drop by drop, the American Chemical Society was told in Cambridge, Mass., by Prof. Werner Bergmann of Yale University. Stony coral, he said, contains minute amounts of a wax-like substance which apparently becomes entrapped in the ever-growing reefs.

It would require only a relatively minor geological change to bring about a disintegration of the reef, and only a slight rise in temperature to liquefy the waxy material and bring it together.

It is not inconceivable, therefore, that some coral reefs of a very distant past have contributed to the formation of present-day petroleum, and that present reefs, such as the Great Barrier Reef near Australia, are accumulating material for the formation of petroleum in a very distant future.

The wax, which makes up about one-seventh of one percent of the coral, consists largely of hydrocarbons and complex alcohols, chemicals similar to those in petroleum.

A ten-year study of more than 100 different species of lower forms of marine life has revealed that the fats of sea-dwelling animals contain an unusually high amount of unsaponifiable fats, or fats that can not be converted into soap by treatment with caustic alkali. As a rule, he stated, the more primitive the animal, the higher percentage of unsaponifiable material in the fat. This is an important fact, the biochemical significance of which is not yet clear.

Science News Letter, October 30, 1948

PHYSICS

Spectrum Analyzer Aids Study of High Energy Rays

➤ A GIANT spectrum analyzer, used to determine how energy is distributed in the beam of X-rays from a 100,000,000-volt betatron, powerful atom-smasher, was revealed by General Electric physicists.

It is an eight-ton, scientific, labor-saving device which yields in a few months data that would take many years to acquire by older methods. The development was made by Dr. James L. Lawson, G. E. staff, and sponsored by the Office of Naval Research. The instrument is called a gamma ray spectrum analyzer.

The radiation produced by the powerful betatron is not uniform, but consists of a mixture of rays of various energies, Dr. Lawson explained. Accurate experimentation requires that the distribution of these energies be determined with precision.

This involves the secondary effect of pair formation, by which energy is literally converted to matter. The X-ray is changed to an electron, which has a negative charge, and a positron, similar but positively charged. In a magnetic field these particles are curved in opposite directions. Their curvature in a known magnetic field indicates the energy of the original X-ray. X-rays of high energy produce particles of correspondingly high energy, and these are bent less than those of low energy.

In Dr. Lawson's device, the X-rays hit a thin metal target where the electron-positron pairs are formed. These pass through a vacuum chamber in the field of a powerful electromagnet. They are then detected as they fall on a battery of 100 Geiger counters. Information from the counters is carried to a bank of registers. These show directly the spectrum, that is, the intensity of the beam at each particular voltage.

Science News Letter, October 30, 1948

BIOLOGY

Male Sex Cells Needed For Fertilization Counted

➤ HOW MANY spermatozoa—the motile male sex cells—are necessary to insure the fertilization of one egg and thus start a new life?

An answer to that question is now of great practical importance, with the development of artificial insemination in the livestock industry. Dr. C. R. Austin, of the National Institute for Medical Research in London, reports an effort to find it experimentally, in the British scientific journal, NATURE (Oct. 2).

For essential biological purposes, of course, only one male cell needs to penetrate the egg, so that its nucleus can bring about fertilization. However, it seems probable that a certain amount of a chemical compound known as hyaluronidase, supplied by the male, is needed to enable that one necessary spermatozoon to pass through the egg's covering membrane. With this quantity, some excess of the male fertilizing fluid seems to be required, containing large numbers of sex cells.

Rabbits and rats were used in Dr. Austin's experiments, because of their small size and low cost; but principles thus determined are indirectly applicable to larger animals. He found that a rat egg could be fertilized when less than one hundred male sex cells were present. In the rabbit, fertilization seemed to require the presence of a thousand spermatozoa.

Science News Letter, October 30, 1948

INVENTION

Microphone Clamps on Nose To Cut Outside Noises

➤ A TINY microphone that clamps on the base of the nose like a pair of pince-nez glasses is the newest aid for communications in noisy places like boiler-shops or engine-rooms of ships. It is the joint invention of William R. Blair of Washington and Albert E. Woodruff of Oak Park, Ill., to whom U. S. patent 2,451,317 has just been granted.

Reason for its use is that when an ordinary microphone is employed in such noisy places it picks up and amplifies the noise as well as the speaker's voice and thus makes the bedlam worse than ever. By clamping the microphone against the nasal bone, it is possible to eliminate the air gap and thus keep out the external noises, while it picks up the speaker's words by bone conduction.

The apparatus is held steady by a light head-band, and the light wire connection to the amplifying set leads back over one of the user's ears.

Patent rights have been assigned to Automatic Electric Laboratories, Inc., of Chicago.

Science News Letter, October 30, 1948

PSYCHOLOGY

What Sways the Voter

Some are greatly influenced by family and friends, while others vote according to political tradition. These are the uncertain few at whom political campaigns are aimed.

By MARJORIE VAN DE WATER

➤ HOW WILL you vote on election day?

If you are like the majority of American voters, you already know. Maybe you knew last May even before the candidates were nominated. Before Wallace started a third party. Before the Dixiecrats first organized.

All the flood of impassioned campaign oratory you have been listening to, the newspaper editorials, the television programs, the handbills and airplane sky writing have not actually changed many votes.

What the campaign propaganda has done, mostly, is to make the Truman supporters more enthusiastic about their choice and to make the Dewey fans more than ever determined to put a Republican president in office. And that is important. The voter likes to be bolstered in his political faith. He likes to know that others think as he does. And he likes to be provided with good logical reasons for his beliefs.

About half the voters, in general, know how they are going to vote long before the formal campaign opens. But there are a few who do not make up their minds until the morning of election day, or who change their minds—perhaps several times—before the moment arrives to drop the ballot in the box.

Uncertain Voters

Those few—the uncertain, the "independent voters," the fickle who change with the weather—those are the ones to whom all the high pressure campaign "salesmanship" is directed.

Why are some uncertain? What causes a man to change his vote? Repeated interviews with voters during the months before presidential elections have provided the basis for a psychological study of this.

The uncertain voter is likely to be the man who is driven by various pressures working at cross purposes, it was found in one study conducted by Dr. Paul F. Lazarsfeld of New York and his associates. Their findings are described in a new book, THE PEOPLE'S CHOICE (Columbia University Press).

The man in this election, for example, who has always voted the straight Democratic ticket and who has always been a firm defender of states' rights, found himself faced with a difficult decision when Truman was nominated.

In other cases, political traditional choice may conflict with religious prejudice or either may interfere with a desire to elect a man from a favored part of the country.

People are greatly influenced by their family and close friends. But sometimes there is disagreement among these so that a person may be persuaded in one direction by a brother and in the opposite way by a friend.

In fact, whether you vote for Truman, Dewey, Wallace, Thurmond or Thomas, the chances are you will do so because you have always been a Democrat, Republican, "liberal," Southerner or Socialist or else because your family, friends or the members of an organization you belong to plan to vote the same way.

That is what Dr. Lazarsfeld found in his intensive study of voters in Erie County, Pa.

Campaign Speeches

If you listened last night to a campaign speech, and were influenced by what was said, it was probably because you were already prejudiced in favor of the speaker. If you were prejudiced strongly against the candidate when you tuned in the station or went to the auditorium, it is likely that you came away even more strongly determined to vote against him.

So you are a much better campaigner for your favorite candidate than is the candidate himself.

Suggestions dropped at the family dinner table, or by a neighbor over the back fence or in the grocery are much more likely, it seems, to swing a vote at the last minute, than is the carefully planned election propaganda.

Voters are also influenced more by the personality of the man running for President than by other party action. Dr. Lazarsfeld questioned voters who had waited until after the party conventions to make up their minds how to vote. Only a few said that they made their choice on the basis of the party platform. Not many were swayed one way or the other by the choice of vice-presidential nominee.

If you think of the election as a great national drama in which the actors include all the voters, then it is the candidate for President who is the leading star—the hero of the play.

And that is, actually, the psychological mechanism employed by the wise political strategist, according to Robert C. Myers, social psychologist of Princeton University.

Not only in his speeches but in all the activities of the campaign, the handshaking, baby kissing, the tours of the grassroots—the successful campaigner tries to get the voter to think of him as the great lover of the people. This naturally puts each voter into the part of the other lead, the lady in distress who, if she only puts her trust in the candidate, will be saved from danger and evil.

The villain? The campaigner is sure to pick at least one. Preferably it is one that the voters already hate and fear. It may be capitalism, communist labor organizations, bureaucracy, war, interference with individual rights, boss politics, Russia or dreamy idealism.

Psychological Aspect

Next step in the psychological vote gathering is to identify the political opponents with the appropriate villain in the minds of the voters. This is the name-calling, mud-slinging aspect of campaigning. It is an important part because hate is fluid; it can easily be diverted from one object to another through this kind of association. If the political leader can succeed in causing the voters to hate his opponent, he may win because it is very common for people to vote against the candidates they dislike rather than voting for anyone.

But if the campaigner is not skillful, he can work himself into a pretty predicament in this way, Mr. Myers points out. He has cast the voter in a role that is not very

PRESSURE CAMPAIGN — Badges and buttons, displayed by a dealer in Americana, are a part of the traditional campaign. They may help swing votes—if they are worn by the right people.

PERSUASIVE ARGUMENTS—A "bull session" may swing more votes than a campaign address. Your vote tends to be influenced more by friends and relatives than by the candidates' oratory.

active. He may have too much faith in the leader. He may be too sure that his favorite will win and thus save the day. He may just stay home on election day and not vote at all.

The "band-wagon" appeal may now be brought into play. It is a characteristic of the American voter that he likes to be on the winning side.

But all of the appeals of the experienced and talented campaigner may pale into insignificance in the face of some moving world event.

If America is plunged into war on the eve of election, it could change thousands of votes. The choice of a war leader might be entirely different from the person voters would pick to handle pressing domestic problems, avert an economic depression, "crack down on labor," or reduce taxes.

A break in the stock market bringing a great business depression is usually the cause of great swings in the political tide. These ups and downs of public sentiment have been charted by Louis H. Bean, statistician of the U. S. Department of Agriculture, who, more or less as a hobby, has made a specialty of predicting elections. He found a clear relation between the business cycle and the political cycle.

A business crisis is more important in swinging votes than an international crisis, he found. That is because a depression affects voters all over the country alike. The international crisis is likely to cause division among the voters and raise issues which separate East from Midwest, for example, or one group from another. Dr. Bean reports his studies in How to Predict Elections (Knopf).

Economic bad times work to the disadvantage of whatever political party is in power at the time. The League of Nations issue is generally held responsible for the defeat of the Democrats in 1920, but Mr. Bean considers that the fact that the prices farmers received for their products had declined 20% between May and election day, was certainly a major factor.

Franklin D. Roosevelt was a depression-created President, Mr. Bean points out, and the New Deal began to wane in popularity with the decline in business activity and agricultural prices in 1938. Harding, McKinley and Cleveland in 1884 were also depression elected.

Influence of Calamities

Droughts and other natural calamities are also likely to bring about a change in the political point of view. Whenever men are unhappy or in distress, the natural tendency is to want to change things. It is not possible to change the weather at will, but you can change your vote and hope for better days.

But whoever you vote for, when election day is over you are likely to find that you and all your neighbors are more favorably disposed toward the man who wins. If you voted for him, you will be more staunch than ever in his support. If you were uncertain whether to vote for him or not, you will probably be won over. If you voted against him, you will be less down on him than you were during the heat of the cam-

"The whole world is queer except thee and me, and sometimes even thee seems a little queer"

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by Winfred Overholser, A.B., M.D., Sc.D. and Winifred V. Richmond, B.S., A.M., Ph.D.

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Do You Know?

The dusky *salamander*, the most common type along streams in the eastern part of the United States, lays from 20 to 40 eggs beneath a stone near a spring and stays with them for two months until they hatch.

Frederick the Great is said to be responsible for promoting *potato culture* in Prussia; a little over two centuries ago he had seed potatoes distributed free and compelled the peasants to cultivate them.

In making *asbestos cloth*, a certain amount of cotton fiber is often used to give a firmer construction; the fireproof asbestos fibers are slippery and do not hold together as well as when a cotton mixture is used.

Gasoline vapor, found in some natural gases, is recovered in tall slender towers called absorbers; in these, oil trickling downward is encountered by the gas-gasoline mixture and the gasoline is thus salvaged.

Dairies have used sound waves, too rapid for the human ear, to homogenize milk; they shake up the milk so violently that the fat globules blend themselves with the water globules in such a way as to be not easily separated.

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paign. When he is inaugurated in January, everybody will be cheering.

Americans like to climb on the band wagon. They also have a way of swinging in the direction of the most popular choice. This is what gives democracy in this country its stability, psychologists believe. It is what makes it possible for us to go on having hotly contested elections and then, after all the bets are paid off, settling down to business again satisfied with the result.

Science News Letter, October 30, 1948

MEDICINE

Greater Hope for TB

➤ GREATER HOPE is now held by medical authorities that tuberculosis of the bones and joints and genitourinary tract will be improved by streptomycin treatment.

In the future, also, there may be fewer undesirable reactions to the drug since it has been found that the daily dosage can be cut in half without affecting the results.

These conclusions were contained in the second annual progress report on the effects of streptomycin treatment in all types of tuberculosis which appeared in the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION (Oct. 23). Dr. Austin Smith, secretary of the Association's Council on Pharmacy and Chemistry, states that the conclusions are based on a study made of 2,780 patients with all types of tuberculosis treated with the drug since June, 1946. The Veterans Administration and the Army and Navy have cooperated in this investigation.

Types of tuberculosis and their response to treatment are as follows:

In 943 patients with tuberculosis of the lungs 77% to 83% showed improvement. Moreover, 75% of the patients who were becoming worse prior to streptomycin treatment, improved during treatment, "a reversal in trend which is regarded as especially significant," according to the report. The improvement, however, is partial and only rarely complete and there is a high rate of relapses, Dr. Smith points out.

In 112 patients with involvement of the windpipe and its branches, and 166 patients with tuberculosis of the larynx or voice organ, there was from 80% to 90% improvement. These two types "compose one of the most favorable fields for streptomycin therapy," Dr. Smith states.

In 368 patients with TB-produced open sores and ulcers of the skin, nearly four out of five, or 78% of the sites of infection were healed.

In 192 patients with TB of the bones and joints, 91% showed improvement in that there was a reduction in inflammation, pain and swelling.

In 112 patients with TB of the genitourinary tract, there was an 80% improvement.

Favorable results were also obtained in small numbers of patients with TB of the alimentary tract, TB of the lymph glands, peritonitis, and inflammation of the middle ear.

Science News Letter, October 30, 1948

MEDICINE

Drug Relieves Gas Pains

➤ ONE of the common distressing aftereffects of operations, abdominal distention, or "gas pains," can be prevented or quickly relieved in many patients by a chemical called urecholine.

The good results with this medicine were reported by Dr. Clarence E. Stafford of the College of Medical Evangelists School of Medicine and Drs. Alexander Dederer and Arthur I. Kugel of Los Angeles at the meeting of the American College of Surgeons.

About half of a group of 41 patients had good results from lozenges of the drug put under the tongue three times a day, and another third so treated had only slight or moderate discomfort from distention or cramping. Some of those who got no relief when the drug was given under the tongue were then given a small dose by injection into the skin. This brought relief within about five minutes.

The drug must not be given by injection into the muscles or veins, the doctors cautioned, because then it may cause a drop in blood pressure and collapse. The dose, they also pointed out, should be adjusted for each patient.

Science News Letter, October 30, 1948

Don't Get "Stuck"!

Read "How to Be an Expert Car Buyer", the sensational new 96 page book sweeping the country. It can save you hundreds of dollars. Covers 36 tricks used to defraud new and used car buyers; fair prices and trade-ins; fair financing and insurance; operating and repair costs; how to spot a "lemon"; stolen cars; etc. Mr. R. J. Schmunk, Pres. AAA, states: "Even a hasty reading of your valuable book should prevent most people from falling into the most obvious mistakes." A copy should be in every American home. On sale at Macys, New York; Gimbels, Phila.; Marshall Field, Chicago. Only $1; COD $1.18. *Cummings Enterprises, Keystone State Bldg., Phila. 7, Pa.*

OPHTHALMOLOGY

Sight Restored by Rays

➤ BETA RAYS from radium or radon are giving results "unobtainable by any other method" in restoring eyesight lost through scarring of the cornea, Dr. William H. Boyd of Los Angeles reported at the meeting of the American College of Surgeons.

The use of X-ray or radium treatment around the eye has been discouraged for years because of danger of cataract formation. This danger, Dr. Boyd finds, has been over-rated.

Patients whose eyesight improved under beta ray treatment were those whose corneas were scarred either through injury or as a result of syphilis. Scarring of the cornea due to faulty nutrition was not much helped.

The cornea is the transparent outer covering in front of the eyeball. When it is scarred, light cannot get through and eyesight is impaired. Microscopic study of such scarred and thickened corneas showed that the layers of cells making up the cornea had increased in number and the cells had changed in shape. The ray treatment resulted in a decrease in numbers of cell layers and a tendency for the cells to flatten back to a shape resembling the original one.

Science News Letter, October 30, 1948

MEDICINE

Urge Early Child-Bearing

➤ SUBSIDIES to make early marriages possible for young people of superior intelligence and education, especially the young women, is the unique prescription for disease prevention offered by Dr. Joe Vincent Meigs of Boston, to the American College of Surgeons meeting in Los Angeles.

The particular disease to be prevented in this way is one peculiar to women. It is called endometriosis and is a condition in which the lining tissue of the uterus is found not only inside but outside the uterus and sometimes on nearby organs. Pain and menstrual disturbance are among the symptoms. The condition may lead to sterility either through its effects on child-bearing organs or through operations necessary to relieve it.

The disease appears at about the age of 26 years. It is so much less common among poor women who marry and bear children at an early age than among women of upper educational levels who postpone marriage and child-bearing that Dr. Meigs thinks the cause is the "non-interruption of menstrual periods from 14 to 26 when marriage and child-bearing does not occur."

Conservative methods which will sometimes relieve the pain and other disturbances should be tried in young women, Dr. Virgil S. Counseller of the University of Minnesota urged. The more radical procedure of removing the uterus should be reserved for women in their middle-thirties so far as possible.

Science News Letter, October 30, 1948

ENGINEERING

Small House Costs Cut by Improved Building Methods

➤ TEN PERCENT saving in the cost of construction of small houses designed with non-load-bearing partitions is possible, it has been proven by the Small Homes Council at the University of Illinois. Improved construction methods are the answer.

In a year-long research project, six houses were built, identical in size and arrangement. In their construction, the industry-engineered house plan developed by the Producers' Council and the National Retail Lumber Dealers Association was used. The project was a cooperative effort of the University of Illinois and the U. S. Department of Commerce. The Producers' Council, a group of manufacturers of building materials, acted as technical advisers.

In this cost-saving construction, the house is erected as a single large room, in which partitions that bear no weight but their own are later installed. Floors and ceiling are completed before the partitions are put in place. The roof is carried by trusses, constructed on the ground in the form of triangular frames, and lifted into place as completed units.

Both exterior and interior walls are put together as complete units while flat on the floor, and then raised into position. Floors are laid, interior finish is applied on ceilings and walls, and plumbing is put into place before the interior partitions are erected. Building materials are pre-cut to dimension by powered machines before being assembled on the job.

Details of the new ideas utilized in these homes are presented by the Small Homes Council at the University in a non-technical, illustrated, 12-page circular titled CONSTRUCTION METHODS which can be obtained on request. A technical report is available also from the Council for $2.50.

Science News Letter, October 30, 1948

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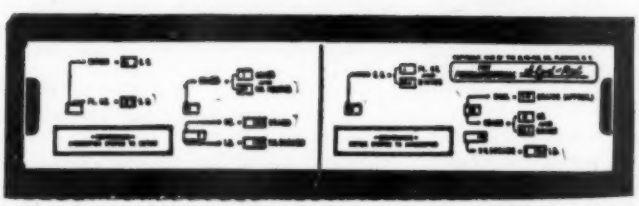

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MEDICINE

Skin Cancers Removed

➤ A CHEMICAL-SURGICAL method of removing skin cancers is announced by Dr. Frederic E. Mohs of the University of Wisconsin Medical School in the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION (Oct. 23).

The method is said to remove the cancers "safely and completely" and to be "especially valuable for highly malignant or highly invasive lesions which fail to respond to other treatments."

A 96.2% five-year-cure rate in 291 patients with a slow-growing form of skin cancer, and an 84.4% five-year-cure rate in 136 patients with a more serious form of skin cancer are reported.

The method consists in applying a paste which kills a layer of cancer tissue without breaking it up or destroying the appearance of the cancer cells. The dead layer of tissue is cut off and the cancer is removed by paste and surgery, layer by layer. Each layer of tissue is carefully examined under the microscope.

Clinics with special facilities and technical assistants trained in the technique are essential for obtaining best results with the method, Dr. Mohs points out.

This need for special facilities and special training in the technique of the method should be emphasized as a warning to the general public that the results reported by Dr. Mohs should not be expected from any salves or pastes sold and advertised as cancer cures.

Science News Letter, October 30, 1948

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POPULATION

Boom in 1947 Baby Births Attributed to Prosperity

➤ DEMOBILIZATION and the prosperity which followed it are responsible for the record-breaking birth rate last year, P. K. Whelpton of the Scripps Foundation for Research in Population has explained in a report of the U. S. National Office of Vital Statistics.

The baby boom produced approximately 3,900,000 births in 1947, Mr. Whelpton estimates. Of these, 1,435,000 were first births to native white women. These figures do not mean that more women are entering motherhood, he says. About two-thirds of the mothers had at least one child already.

Nor does it indicate a trend toward larger families, he adds. The rates for seventh and subsequent births in 1947 were lower than those for any previous year.

Mr. Whelpton used the birth statistics for upstate New York in his calculations. The national figures for last year will not be tabulated until next winter or spring.

Science News Letter, October 30, 1948

CHEMISTRY

Flameproofing Fabrics in Home Is Simple Process

➤ FLAMEPROOFING household fabrics, particularly those of cotton, linen and rayon, can be effectively accomplished by any housewife, the National Bureau of Standards states in a recent bulletin in the interests of fire prevention.

The flameproofing formula suggested by the Bureau, one that has long been used with considerable success, contains a solution of one pound of crystalline borax and 13 ounces of boric acid in two gallons of water. The water is heated to allow the constituents to dissolve and mix. When cooled to room temperature the solution is ready for use.

Any washable fabric that is dry and clean can then be immersed in it. For fabrics that wet easily, dipping is all that is required. For heavy fabrics, a soaking from 10 to 15 minutes may be necessary to insure proper impregnation.

The article should then be wrung by hand and, upon drying, ironed at a lower temperature than ordinarily used. This treatment does not affect the color of most dyes, does not encourage mildew, and is non-poisonous. It is not permanent, however, and must be renewed after each washing.

Because of the many disastrous fires to which draperies, clothing, canvas and other textiles have added much, scientists have long worked diligently to perfect fabric flameproofing. Cotton and rayon articles present the chief problem because they are made up of vegetable fibers which, upon heating, decompose into readily combustible gases. Wool, hair, and other fibers of animal origin present a less serious problem because their protein constituents liberate non-flammable gases. Synthetic fibers, such as nylon, are usually less flammable, although they melt at relatively lower temperatures than other textiles.

Science News Letter, October 30, 1948

MEDICINE

Weapons Against Plague Successful in Field

➤ SCIENTIFIC WEAPONS against bubonic plague, developed during the past half-dozen years, have now proved themselves in the field to the extent that plague is no longer an epidemic threat.

This was agreed on by two of the world's top authorities on plague, Dr. R. Pollitzer, of the World Health Organization, plague fighter in the field in China since 1921; and Dr. Karl Meyer, director of the University of California's Hooper Foundation and leader in laboratory development of the newest weapons. Dr. Pollitzer said a combination of techniques is responsible for plague's defeat.

One, DDT can temporarily suppress plague over a wide area by killing off fleas as 1080 kills rats. Two, sulfadiazine proved effective in preventing plague among persons exposed to it. Three, rabbit-immune sera and especially streptomycin cure victims who have contracted the plague. The latter two techniques were developed by Dr. Meyer at the Hooper Foundation during the past few years.

Dr. Pollitzer, stating plague is now down in China, made the first report of results of a small outbreak of seven cases in Fukien province last summer. Good results were obtained through treatment with streptomycin. Twenty-six persons exposed to these cases were treated with sulfadiazine; not one of them came down. Ordinarily, doctors would expect over half to be stricken.

Science News Letter, October 30, 1948

Books of the Week

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A. S. T. M. STANDARDS ON PLASTICS—Committee D-20 on Plastics—*American Society for Testing Materials*, 595 p., illus., paper, $4.50. Includes specifications, methods of testing, nomenclature and definitions.

BIBLIOGRAPHY AND INDEX OF GEOLOGY EXCLUSIVE OF NORTH AMERICA, VOLUME 12, 1947—Marie Siegrist and Eleanor Tatge—*Geological Society of America*, 359 p., $3.50. An alphabetic author list and subject index.

CENTENNIAL SYMPOSIA, DECEMBER 1946: Contributions on Interstellar Matter, Electronic and Computational Devices, Eclipsing Binaries, The Gaseous Envelope of the Earth—*Harvard College Observatory*, 385 p., illus., $5.00. The complete papers presented by many astronomers from various observatories at an important meeting.

CURRENT TRENDS IN CLINICAL PSYCHOLOGY—S. Stansfeld Sargent, Ed.—*New York Academy of Sciences*, 62 p., paper, $1.50. Discussion by a number of authors of the differences between directive and non-directive therapy, and the uses of group psychotherapy and psychodrama.

ELECTROMAGNETIC WAVES AND LIGHT: An Introductory Physical Discussion, First Part—Charles F. Meyer—*Ulrich's Book Store*, 83 p., illus., paper, $1.35. A text for students who have already studied college physics and mathematics through the calculus.

EMOTIONAL SECURITY—Milton R. Sapirstein—*Crown*, 291 p., $3.50. Applying the principles of psychoanalysis to the problems of healthy adjustment in marriage and other spheres of daily life.

ENGINEERING THERMODYNAMICS: Theory and Applications—Jesse Seymour Doolittle and Alexander Hamilton Zerban—*International Textbook Co.*, 428 p., illus., $5.00. A text for engineering students.

FEEDS AND FEEDING: A Handbook for the Student and Stockman—Frank B. Morrison—*Morrison Publishing Company*, 21st ed., 1207 p., illus., $7.00. Revised and rewritten to include the most recent advances in animal nutrition.

FONTES HISTORIAE BOTANICAE ROSSICAE—Vladimir C. Asmous—*Chronica Botanica*, 31 p., illus., paper, $1.25. An enumeration of all the publications which deal with the history of botany in Russia. The Russians, states the author, have been lovers of nature, flowers and plants since olden times.

FUNDAMENTALS OF PHYSICAL SCIENCE: An Introduction to the Physical Sciences—Konrad Bates Krauskopf—*McGraw-Hill*, 2d ed., 676 p., illus., $4.50. For the general reader or college student who wants a general knowledge of the physical sciences rather than detailed study in any one.

HOW LAYMEN CUT MEDICAL COSTS—*Public Health Institute*, 35 p., illus., free upon request to the publisher, 127 North Dearborn St., Chicago 2, Ill. The story of a venereal disease clinic which gave nearly 6,000,000 treatments to 359,496 individuals, many of whom could not pay, and which remained self-sustaining.

THE HYGIENE OF THE BREASTS—Clifford F. Dowkontt—*Emerson Books*, 222 p., illus., $2.50. A specialist in plastic surgery of the breast writes on the care and proper dress of the breasts for nursing mothers and other women who wish beauty with health.

INVENTORY OF RESEARCH IN RACIAL AND CULTURAL RELATIONS, Bulletin No. 1—June 30, 1948—*Committee on Education, Training and Research in Race Relations of the University of Chicago* and *The American Council on Race Relations*, 55 p., paper, $1.00.

THE LIFE OF SCIENCE: Essays in the History of Civilization—George Sarton—*Schuman*, 197 p., $3.00. Collected essays by the well-known Harvard historian of science in his delightful, inimitable style.

MESON THEORY OF NUCLEAR FORCES—Wolfgang Pauli—*Interscience*, 2d ed., 69 p., $2.00. Revised in consequence of the fact that some of the older experiments have become obsolete, this book by a Swiss scientist is based on a lecture given in 1944 at MIT.

THE SOUTH AMERICAN HANDBOOK 1948: A Year Book and Guide to the Countries and Resources of South and Central America, Mexico and Cuba—Howell Davies, Ed.—*Trade and Travel Publications (H. W. Wilson)*, 25th ed., 778 p., $1.50. A useful reference book of British origin containing information for each country on geography, economics, resources, and politics.

VACUUM TUBE AMPLIFIERS—George E. Valley and Henry Wallman—*McGraw-Hill*, 743 p., illus., $10.00. A technical book intended to preserve the experimental findings of the Radiation Laboratory at MIT.

YOUR LIFE IS IN YOUR GLANDS: How Your Endocrine Glands Affect Your Mental, Physical and Sexual Health, Your Appearance, Personality and Behavior—Herman H. Rubin—*Stratford House*, 192 p., illus., $2.75. A description, in non-technical language, of the nature and behavior of the powerful endocrine glands.

Science News Letter, October 30, 1948

GENERAL SCIENCE

Engineer To Receive Medal For Scientific Achievement

➤ THE 1949 John Fritz Medal for scientific achievement will go to Charles Metcalf Allen, professor of hydraulic engineering at Worcester Polytechnic Institute and director of the Alden Hydraulic Laboratory, Worcester, Mass., it was announced by the Board of Award.

Prof. Allen was cited "for exceptional achievement in hydraulic engineering," and as "the founder of a notable hydraulic laboratory; prominent teacher, consultant, inventor and author."

Science News Letter, October 30, 1948

Scientists have discovered that by varying the pitch of *supersonic sound* they can kill one kind of germ and leave other germs alive.

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SAFETY STEPLADDER, for use in the home, has three sturdy hinged platforms at three convenient levels instead of the conventional treads used in most ladders. The user literally stands within the ladder, close to the job, and directly over the center of gravity. Platforms not in use swing easily out of the way.

Science News Letter, October 30, 1948

SLIDE RULE, pocket-size and made of a white plastic, consists of three parts, the rule proper with overturned edges to hold the slide in place, the slide itself, and an indicator with a hairline in the center. The six-inch device can be used for mathematical problems from multiplication to cube roots.

Science News Letter, October 30, 1948

SILICONE-TREATED tissues, for cleaning the lenses of eyeglasses, leave an invisible film of silicone on the surface of the glass which improves clarity and protects the lenses from minor surface scratches. They are recommended also for cleaning the surface of women's compact mirrors.

Science News Letter, October 30, 1948

COFFEE BREWER, that makes a single cup at a time, consists of an aluminum drip-top, a plastic cover to hold the heat during dripping, and a half-pint glass cup encased in a non-breakable plastic holder with a handle. The picture shows the assembly in use.

Science News Letter, October 30, 1948

PASTRY CLOTH for pie-making is a plastic sheet to which the dough does not stick. In use, dough is placed between two sheets, rolled to the proper size and thickness, the top film peeled off, the dough inverted into the baking pan, and the other film removed. The dough never touches the rolling pin or the pastry board.

Science News Letter, October 30, 1948

MOTORCYCLE COVER, tailor-made of water-proof nylon, fits snugly over the machine in storage and protects it against weather, rust, dust and grime. When not in use, the cover is folded to occupy a space 10 inches long, six wide and two thick.

Science News Letter, October 30, 1948

INDIVIDUAL CORRUGATED paper packets for salt are intended to replace the use of salt shakers in hospitals and railway diners and on airplanes. Each unit, about the size of a package of paper matches, contains four cells to hold the salt; the corrugations provide a sprinkling action similar to that of a regular shaker.

Science News Letter, October 30, 1948

• Nature Ramblings *by Frank Thone* •

► HALLOWE'EN, as probably everybody knows without needing to be told again, is a contraction of All Hallows' Even, which means the eve or vigil of the Feast of All Saints, long ago appointed by the Church to be observed on the first day of November. Like the vigils of all the major feasts, it is liturgically a day of fasting and prayer; but stubborn sinners have persistently balked at this and turned the evening into a time of merrymaking within doors and of mischiefmaking without.

The carnival nature of present-day Hallowe'en observance is said to be a survival of the pagan saturnalia, a harvest-home festival observed in ancient Latium even before the founding of Rome. After their hard labor in getting in the crops, slaves and hired field hands were rewarded with a week of license, when they could get as drunk as they pleased and raise hob generally. It was supposed to represent a return of the reign of Saturn, banished father of the gods—a legendary golden age of prosperity and plenty, of all play and no work.

Old Gods Return

When all the old pagan gods followed Saturn into banishment after the triumph of Christianity, they were regarded as devils. Saturn shared with Satan the kingdom of the dark, and his roistering followers naturally acquired familiars and pets from among the nocturnal fauna—bats and owls and black tomcats. Since slavery no longer exists, it is children and adolescents who take advantage of an evening of relaxed discipline, and disguise themselves as imps and ghosts, warlocks and witches.

The one distinctively American element that has been added to the Hallowe'en ritual is the use of hollowed-out pumpkin shells as the foundation of the fiery face of the mock Saturn—or Satan, if you prefer. Pumpkins and hard-shelled squashes were unknown in Europe before the discovery of America, but their obvious suitability for making grotesque scare-heads brought about their adoption into the carnival paraphernalia even in Colonial times.

Science News Letter, October 30, 1948